Fifth International Workshop on Detection, Classification, Localization and Density Estimation of Marine Mammals using Passive Acoustics

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LONG-TERM GOALS

The goal of this project was to organize and hold the Fifth International Workshop on Detection, Classification, Localization and Density Estimation of Marine Mammals using Passive Acoustics.

OBJECTIVES

Same as Long-term Goals, above.

APPROACH

The venue was reserved approximately two years ahead of the workshop. The workshop was advertised via a variety of publicity avenues. It was organized along the lines of similar workshops in the past, with presentations (relatively long ones to allow time for discussion), poster sessions, and workshop datasets for people to test their methods on.

WORK COMPLETED

Pre-Workshop Publicity. The workshop was announced at several prior scientific meetings:

- The Acoustical Society of America (fall 2009 in San Antonio, spring 2010 in Baltimore, fall 2010 in Cancun, spring 2011 in Seattle)
- The Fourth International Conference on Detection and Classification of Marine Mammals using Passive Acoustics (Pavia, Italy, 2009)
- The International BioAcoustic Congress (Pavia, Italy, 2009)

The workshop was also announced through postings to these electronic mailing lists:

- the bioacoustics list (Bioacoustics-L@cornell.edu)

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- the marine mammal science list (marmam@lists.uvic.ca)

Notices about the workshop were also placed in journals and newsletters:

- The Journal of the Acoustical Society of America
- Marine Mammal Science

Website. A website for the workshop (http://www.bioacoustics.us/dcl.html) described and advertised the workshop, provided logistical information, and allowed participants to register for the workshop. The website received many thousands of hits from approximately 20 countries.

Venue. The workshop was held at Mt. Hood's Timberline Lodge from Aug. 22-25, 2011 (Monday - Thursday), with a preceding day (Sunday Aug. 21) devoted to tutorials. This site was reserved approximately two years in advance.

Registration and abstracts. Workshop attendees registered for the workshop online at a website arranged by OSU Conference Services. This site opened approximately six months before the workshop was held. Abstracts were submitted via email to my laboratory.

Datasets. Essentially two datasets were prepared, one for detection and classification, and one for localization. The detection/classification dataset contained both click and whistle sounds from odontocetes (common dolphin, bottlenose dolphin, spinner dolphin, and melon-headed whale), while the localization dataset contained Pacific minke whale 'boing' sounds. Dataset preparation was done by H. Klinck (Oregon State Univ.), M. Roch (San Diego State Univ.), and E.-M. Nosal (Univ. Hawaii).

Journal Issue. A special issue of the Journal of the Acoustical Society of America is being prepared. This issue is focused on detection, classification, localization, and density estimation methods, and authors from the workshop were invited to submit papers. The issue should come out in early 2013.

RESULTS

Attendance and Presentations

A total of 115 people registered, of which approximately half identified themselves as students. In all, 85 papers representing a wide variety of technical approaches, subjects, and species were accepted for presentation. Of these, 67 were oral presentations and 18 were posters; they were evaluated and arranged into oral and poster sessions in May 2011. Oral presentation sessions were arranged such that each included a senior researcher (or perhaps two), and junior researchers or students. This proved to be beneficial for information exchange and kept movement in and out of sessions to a minimum. Topics for talks and posters covered a range from theoretical to applied. Although there was not a strict division of topics, Monday's presentations generally focused on detection, Tuesday's on classification, Wednesday's on localization, and Thursday's on density estimation.

The workshop schedule allowed for 20-minute oral presentations by each speaker. The posters were up all week and could be viewed at any time; in addition, there were two 2-hour poster sessions in which the poster presenters stood by their posters, and the focus was solely on the posters.

There was also a 1-hour time period in which results of running people's algorithms on the detection/classification dataset and the localization dataset were reviewed and compared. This also featured contests to determine the best detection and best classification performance; these contests were both won by Dr. Douglas Gillespie.

The day before the workshop, two day-long parallel tutorial sessions were held: *Introduction to Detection, Classification and Localization* (taught by D. Mellinger, M. Roch, and E.-M. Nosal) and *Introduction to Density Estimation from Passive Acoustic Data* (taught by L. Thomas, T. Marques, D. Harris). The DCL tutorial was fully subscribed, with 41 attendees, and had a short waiting list, while the density estimation tutorial had approximately 20 attendees.

Students applied for support to attend the workshop by emailing an application detailing their involvement and monetary need. Students receiving support were required to have either an oral or a poster presentation. A total of 16 students were supported with grants ranging from $500 to $1600.

IMPACT/APPLICATIONS

The primary goal of this workshop – to bring engineers, acousticians, and statisticians, and other scientists from various fields together to discuss advances in detection, classification, localization, and density estimation – was met with good success. A large number of interesting talks and posters were presented, and new methods were described and evaluated. The workshop was heavily attended by students, perhaps in part because of the tutorials held beforehand; I estimated that at least a third of the attendees were students or beginning postdocs.

Many people commented that they both enjoyed and were enriched by the workshop, leading to the assessment that the workshop was a success for attendees. (But there's sampling bias here: People who liked the workshop were undoubtedly much more likely to tell us organizers their opinions than people who didn't like it.)

The location of the next workshop was chosen by a group consisting of those organizers of the first five editions of the workshop, as well as some of the sponsors. The group consensus was that Douglas Gillespie should host the next one at St. Andrews in Scotland, given (1) that he has been so active in the DCL community; (2) since workshop locations alternate between the US and Europe, the next workshop should be in (or near) Europe; (3) St. Andrews is home to the Sea Mammal Research Unit (SMRU); and (4) there is the strong research group working in density estimation at St. Andrews. Dr. Gillespie assented to host the 2013 workshop.

Suggestions for future workshops

- Workshop venue:
    (1) Ensure there is a room with sufficient space for the expected number of people, and also room for posters.
    (2) Ensure there is good audio/visual support, especially speakers for playing sounds from the presentation computer.
    (3) Ensure there is high-speed wireless Internet access. (Timberline's was notably lacking in speed.)

(4) Ensure that there are nearby options for meals, or that on-site catering can be arranged. The latter is preferable, at least for most meals, because it keeps attendees together and encourages mixing.

(5) Ensure there is enough lodging in the area, with a variety of price/quality options.

(6) There is accommodation for accompanying persons (spouses, partners, children) at mealtimes.

(7) [from Holger Klinck] Make sure the bar stays open 24 hours. [Dave: Then the workshop would be empty!]

- Papers:

(1) Accept fewer, higher-quality papers, and either have more posters or reject some papers (or both). Some people thought there were too many talks this time about DCL applications.

(2) Keep long (≥ 20 min) presentation times. This both allows for more relaxed presentations than shorter times, and also leaves plenty of time for questions.

(3) Encourage work on the workshop dataset. Possible means to do this: Reserve a day ["geek day"] during the workshop for dataset research, including actual work time (not just talks); advertise and award a prize for the best-performing method(s), like an iPad or a netbook or something; allow only a limited number of non-workshop-data talks (and advertise this fact).

(4) Require that the lead author, or someone deeply involved in the work, presents each paper. This time there was a lab that submitted 5-6 papers and sent a graduate student (with only moderate skill at spoken English) to present all of them.

- Dataset:

(1) Prepare the dataset well ahead of time. Start as soon as possible! We intended to release the dataset 1 year ahead of the workshop, but it got delayed and delayed and only came out six months ahead.

(2) Get help preparing the dataset – don't try to do it all yourself!